



Medicines Optimisation Innovation Centre (MOIC)

Annual Report

2020 – 2021

MEDICINES OPTIMISATION INNOVATION CENTRE (MOIC)

Annual Report 2020 / 2021

Context

The Regional Medicines Optimisation Innovation Centre (MOIC) aims to work towards better patient outcomes by initiating, developing and sharing best practice with regards to medicines use. This is achieved via the following primary activities:

1. Developing a systematic approach to finding and testing solutions for Health and Social Care (HSC).
2. Combining strengths in clinical pharmacy, pharmacy practice, research and service development with technology and business acumen.
3. (a) Developing a medicines optimisation network, linking with the HSC and other life science networks and innovation centres in NI and Europe.
(b) Support knowledge sharing both with the HSC and wider networks and the development of collaborative working partnerships and joint working arrangements between participants.

MOIC Workstreams

In addition to work around Infrastructure, communications & marketing, MOIC activity is split across four workstreams, namely to:

- **Focus on the needs of patients and the NI population.**
- **Accelerate the adoption of innovation into practice to improve clinical outcomes and efficiency.**
- **Build a culture of partnership and collaboration.**
- **Make a meaningful contribution to the NI economy.**

Impact of the COVID- 19 pandemic

Work carried out by MOIC was significantly impacted by the COVID-19 pandemic. The majority of 'normal' business for MOIC was paused for much of the year and the team were tasked with assisting with the regional response to the crisis. Staff rapidly adapted and applied their expertise to areas such as:

- Modelling and procurement of critical supplies
- Ensuring regional oxygen demand and supply was appropriate
- Assessment and supply of personal protective equipment

This work was undertaken whilst taking steps to ensure that the health and wellbeing of all staff was maintained.

Following Wave 1 of the pandemic, MOIC completed a regional review to explore the changes made by pharmacy teams across Northern Ireland in response to COVID-19. A final report "Rapid Review of Pharmacy Services Changed in Response to COVID-19 in Northern Ireland" was

formally published by the Department of Health in September 2020. A virtual conference showcasing the changes made in the region was organised by MOIC in collaboration with Pharmacy Management. This event was attended virtually by over 150 delegates and included 36 presentations.

A number of projects that were underway during the 2019/20 year or that were originally due to start in 2020/21 were unable to progress as planned due to the impact of the pandemic. In some cases projects were paused and will hopefully be resumed during 2021/22.

The remainder of this report will describe the key achievements under each of the MOIC workstreams during 2020/21.

Infrastructure, Communications & Marketing

A team of Programme Managers are key to the functioning of MOIC. During the year, two temporary Programme Managers were appointed using funding obtained via major grant funding. In addition, a further programme manager was appointed in order to cover a period of maternity leave taken by a substantive post holder. In order to assist with building a cadre of skilled researchers within the pharmacy workforce, the MOIC Board approved a business case to part-fund a consultant pharmacist at the Western HSC Trust. The individual was appointed as a respiratory consultant pharmacist in October 2020. The ambition is that they will ultimately spend 25% of their time working on research and service development activities with MOIC, however given their clinical expertise a smaller percentage of their time was available for this as they focused on the care of patients with COVID-19.

MOIC continues to benefit from the skills of a Communications Manager (0.4WTE). Work on rebuilding the MOIC website, including revising the design and content of the site was completed during the year and the new site went live in June 2020. MOIC also has continued to engage with social media, including growing its audience on Twitter (now over 1100 followers) and creating a LinkedIn profile. This assists with communication with wide audience.

Where possible, the MOIC team have attended conferences and workshops across the UK to assist with the promotion of MOIC. In addition, results from specific projects have been disseminated through a variety of means including the publication of papers, undertaking video interviews, attendance and presentations at a range of conferences, website and Twitter. A list of publications, reports and presentations is included in Annex A.

Focus on needs of patients and Northern Ireland population

The use of medicines is the most common healthcare intervention and spending on medication accounts for around 12% of HSC spend. During the COVID-19

pandemic, access to medicines required to treat those in critical care settings was essential. Additionally, there was a need to ensure that supplies required to run critical equipment (e.g., ventilators) were maintained.



MOIC became the regional lead for modelling to establish likely needs for a number of critical items. Mathematical models were developed for critical care drugs, palliative care medicines and continuous renal replacement therapy (CCRT). Using these models, the team worked with the Regional Pharmaceutical Procurement Service to assist in regional planning and preparedness to inform critical care drug requirements. A paper describing this work and the model was published in the European Journal of Hospital Pharmacy. Subsequent to publication, interest was generated in Canada and the critical care drugs model was shared with colleagues in the Alberta Health Services. This work has now been incorporated in a larger modelling piece published by the European Association of Hospital Pharmacists. In addition, a regional database collating the number and type of ventilator machines/models for each Trust coupled with the requisite corresponding consumables was established.

In order to ensure that regional oxygen supplies were sufficient to meet growing demands caused by COVID-19, MOIC led on work to map and model Trust supplies from both bulk storage (vacuum insulator evaporator) and cylinders across the region. In addition, the team liaised with BOC to ensure maximum capacity was achieved from within the oxygen supply system.

At the start of the pandemic, the demand for personal protective equipment (PPE) for HSC staff grew at an unprecedented rate. Linked with this, the number of offers of PPE from commercial companies to the HSC rose dramatically. There was an urgent need to maximise the availability of PPE whilst ensuring that all such products purchased by the HSC met the requisite quality and standards. MOIC worked closely with BSOPaLS and became the lead for technical assessment of offers of PPE regionally. Once MOIC had validated the essential documentation relating to products to ensure that the applicable standards had been met, BSOPaLS completed all of the procurement due diligence tasks to permit purchase of the products. During the six week period from 1st April – 15th May the MOIC team received 592 items to review from 248 suppliers.

Linked to PPE, MOIC sat on the regional task and finish group, which considered potential decontamination protocols for PPE and other items. This work is continuing with regards to review of suitable safe, effective, and waste-minimising processes. Furthermore, MOIC has been involved with national work led by DHSC on transparent masks and requisite specifications.

The COvid ME dicaTion (COMET) study uses pseudonymised data from patients hospitalised with COVID-19 to establish if certain medications affect clinical outcomes in those with COVID-19. A number of papers have been published to date including one which describes no association between use of ACE inhibitors or angiotensin II receptor blockers prior to hospital admission and the clinical course of

COVID-19. A further paper describes an association between Clinical Frailty Scale score and hospital mortality. The study is led by researchers from The Netherlands and MOIC is the coordinating site for the UK.

Following on from MOIC and Queens University Belfast (QUB) research, the pharmacy team at Northern HSC Trust has established a post discharge telephone service. Under this initiative, patients discharged from hospital on multiple medications receive a telephone call from a clinical pharmacist following discharge. Research has shown that these patients have improved medicines optimisation and are less likely to be readmitted to hospital. MOIC continues to liaise closely with this service with regards to continued development and evaluation. During the first part of 2020/21 the service was temporarily suspended as a result of the COVID-19 pandemic, as

staff were redeployed to other clinical areas. For the remainder of the year, the service was disrupted and was unable to run at full capacity with the level of service offered depending on pressures caused by COVID-19. Nevertheless, during the year, a total of 227 patients benefited from the service (range of 0–40 per month with an average of 28 patients per month). On average, the pharmacist made five changes to the medicines of each patient resulting in optimised use of their medicines.

MOIC have been working with the diabetic team at the South Eastern HSC Trust and with researchers at QUB to assess adherence to medication for the treatment of diabetes using a mixed methods approach, including dried blood spots. After receiving ethical and research governance approvals, recruitment for this study started in December 2019 and has now been concluded. A total of 121 patients were recruited. Overall adherence to metformin in adults patients with type 2 diabetes was estimated to be 61.2% and concluded that further attention should be given to the education of patients receiving metformin. Recruitment was lower than anticipated as recruitment had to be terminated earlier than anticipated due to the COVID-19 pandemic.

In primary care, MOIC continues to work with the Health & Social Care Board (HSCB) to evaluate new services that are under development. Details of these evaluations are provided below.

- During the 2019/20 flu season, 26 community pharmacies in the Western HSC Trust Area tested a pilot service that allowed administration of the flu vaccination to frontline health and social care workers. MOIC analysed the data gathered as part of the service and produced a report for the HSCB. A total of 265 vaccines were administered during this period. Reaction from both service users and pharmacists was very positive, with almost all pharmacists indicating they would be willing to offer the service again in the future. Service user feedback showed that 66 frontline health and social care workers were vaccinated using the pilot service, who did not intend to get vaccinated elsewhere during the 2019/20 flu season. The service has since been rolled out to other pharmacies in Northern Ireland due to the success of the pilot.
- During the winter of 2019/20 a pilot study was conducted to test the use of C-reactive protein (CRP) point-of-care testing in primary care for patients with cough, cold and flu-like symptoms. The pilot focussed on the use of CRP results to determine if antibiotics were required to treat symptoms. The service was available in 17 pharmacies and 10 GP practices were involved in the pilot. Evaluation was paused due to COVID-19 and meetings have been held with HSCB representatives in order to ensure the completion of this work during 2021/22.
- A new service for the treatment of uncomplicated lower urinary tract infections (UTIs) in women aged 16 to 64 years was planned for 2020/21. Under this service, eligible patients can visit their community pharmacy, rather than their GP practice for the treatment of UTI symptoms. If indicated, antibiotics will be prescribed by an independent prescribing pharmacist or supplied under a patient group direction. The project was paused during the COVID-19 pandemic but meetings were held during the early part of 2021 with a view to starting the pilot in the spring of 2021. MOIC will lead on the evaluation of the pilot.

- Within Northern Ireland, transformation funding has been awarded to the HSCB in order to scope and establish new models of prescribing by non-medical prescribers. Examples of projects include prescribing by physiotherapists and heart failure nurses. MOIC sit on the Steering Group for this initiative and have been contributing to the review of methodology and evaluation as required.

The Mid & East Antrim Agewell Partnership (MEAAP) project on social prescribing completed during the year. Under the project around 1100 eligible people aged 70 years and over were supported through health and wellbeing hubs and they were able to avail of a range of Alternative Care Prescriptions (ACPs). MOIC assisted in the evaluation of the pharmacy aspects of this work. The final report was submitted in October 2021 and allowed community pharmacy to demonstrate an enhanced delivery of clinical expertise within a new service model developed in collaboration with IMPACTAgewell[®]. The report highlighted the benefits of the programme of care and clearly demonstrated the value of community pharmacy via the Primary care and community together (PACT) model of care in providing this service to both the service users and community pharmacy as a whole. Further funding to allow continuation of this project has now been secured via matched funding between the HSCB and Dunhill Medical Trust.

Antibiotic Kit Review (ARK) was an applied research programme funded by the National Institute for Health Research (NIHR) which assisted clinicians in their decision making regarding antibiotic use. The ARK study was completed in the Northern HSC Trust in February 2021. During model testing it was noted that use of the tool led to an increased stop-rate for antibiotics within the targeted 72 hour period. The ARK decision tool has now been incorporated into the antimicrobial pages of the adult acute kardex for use within the Trust.

Reducing avoidable medicine related admissions (MRAs) is a priority for health and social care. However, there is currently no tool routinely used in Northern Ireland to support the identification of MRAs and data on numbers of MRAs in NI is lacking. MOIC have continued to collaborate with researchers in Sweden, Belgium and The Netherlands to explore two validated tools to screen for MRAs; the AT-HARM tool and the OPERAM DRA Adjudication Guide. It was hoped that a trial of both tools would have been completed in Northern Ireland during the year. This was not possible and alternative options are being explored for 2021/22.

Accelerate the adoption of innovation into practice to improve clinical outcomes and efficiency

MOIC staff continue to be involved in the development and testing of a number of systems to improve patient care. In response to COVID-19, two funding applications were made in collaboration with commercial companies to assist with technology developments namely:

- A proposal for use of predictive analytics for mapping oxygen use was developed in conjunction with Analytics Engines and submitted to the joint Research Councils research funding call. The Research Councils suggested a redirection of the proposal to the NIHR. The outcome of this redirected application is presently unknown.
- An application was made to the ECME Mini Project Grant Awards scheme and was successful. The funding was used to test the ACORRD APP, a digital clinical support service for healthcare professionals who are managing COVID-19 patients. The APP is designed to help organise, triage, monitor and treat patients and was trialled in the Northern

HSC Trust during October and November 2020. Clinician feedback provided useful insight and learning on the usability of the ACORRD system. The pilot study also provided the opportunity to highlight areas of development for implementing the ACORRD system into clinical settings in the future.

During the year, work continued with Healthcare Analytics to develop the tagging and tracking of medical equipment and a systems manager has been appointed to the Trust to oversee the roll out of this initiative. In addition, work has commenced with O’Neills Sportswear, which has developed a PPE gown for use in non-sterile settings. It is anticipated that the gown will be tested at the Northern HSC Trust in 2021/22. As well as testing for comfort and wearability, the gowns will be tagged to see if tracking through laundry systems is successful.

Under the Small Business Research Initiative pilots, two solutions to improve pharmacy skill mix utilisation in the hospital setting were developed by companies. Work commenced during 2019/20 with these partners to explore the next steps for the development of these systems. Progress was severely delayed due to the impact of COVID-19 but work in this area was re-started in February 2021.

MOIC has continued to liaise closely with staff in the Northern HSC Trust to consider research and service developments in Healthcare Acquired Infection and the group have worked on a range of projects together. The group has representation from pharmacy, MOIC and microbiology, and projects seek to address issues related to antibiotic resistance and healthcare acquired infections. During the early stages of the pandemic, members of the group met regularly to consider proposals submitted to the Trust from a range of companies who wished to pilot various COVID-19 testing kits.

In addition, the group continued to work with colleagues in Ulster University, particularly through the support of a PhD student (Sara Gardner). Dr Gardner completed her PhD during the year and her thesis included the following projects:

- A longitudinal point prevalence survey (PPS) which quantified the consumption of antibiotics and HCAI incidence over a 10-year period in NHSCT. The study noted that there was a general trend in the improvement of key quality indicators in antimicrobial prescribing and made recommendations as to how the Trust could prevent HCAs.
- A qualitative study that determined prescribers’ attitudes and knowledge towards the prescribing of antimicrobials, antimicrobial resistance (AMR) and attitudes towards the education on AMR they have received within Antrim Area Hospital. The study strengthened the need for a robust, mandatory training tool on AMR within the NHSCT; the results could inform the development of an antimicrobial stewardship educational tool for prescribers of antimicrobials within the NHSCT.
- As part of the antibiotic threshold work, non-linear time-series analysis was used to identify thresholds in antibiotic use that influenced MRSA incidence rates. Fluoroquinolones, co-amoxiclav and alcohol-based hand rub were found to have significant non-linear relationships with HA-MRSA incidence. The results provided the basis for the development of an antibiotic stewardship policy that aimed to reduce HA-MRSA incidence. The policy was implemented in addition to existing infection control procedures. However, the enhanced policy did not result in the anticipated change in HA-MRSA incidence as an

increasing trend in HA-MRSA incidence was noted.

Work commenced between the team at MOIC and a QUB spin out company (Continga Limited) to trial a novel system for improving medicines adherence in those with respiratory diseases (e.g., asthma, and tuberculosis). Using the system, clinicians can observe their patients as they use inhaled medication with a view to improving how such devices are used. Efforts to establish a pilot of this system in the Belfast HSC Trust was stopped for the majority of the year, however, meetings have been held with a view to recommencing this project. In addition to running the project in Belfast, discussions have been held with the newly appointed consultant respiratory pharmacist at the Western HSC Trust to explore the feasibility of testing the system with her patients.

Build a culture of partnership and collaboration

MOIC continue to work with a range of collaborators from across the world. Activity includes:

- Collaborating in order to apply for large funding grants.
- Attending conferences and events in order to promote MOIC.
- Contributing to the organisation of major conferences.
- Organising a successful hosting programme in Northern Ireland.

In 2019, funding for the iSIMPATY project was awarded to a collaborative group from the Scottish Government, the Health Service Executive in Ireland and MOIC. A total of Euro 3.5million was awarded (Euro 915K for NHSC) by the Interreg programme. Interreg is a series of programmes designed to stimulate cooperation between regions in the European Union, funded by the European Regional Development Fund. The project will trial the use of pharmacy-led medicine use reviews in all three jurisdictions. Three clinical pharmacists took up post in MOIC during the first quarter of 2021. Following a period of training they have commenced work within the Northern HSC Trust to identify and review the medicines of patients on polypharmacy.

MOIC is one of the 36 partners from across Europe participating in the SHAPES Project (Smart and Healthy Ageing through People Engaging in supportive Systems). The project is funded by the EU under the smart and healthy living at home (Horizon 2020) workstream. This project is led by Professor MacLachlan, Director of the Assisted Living and Learning (ALL) Institute in Maynooth and was awarded a total of Euro 21million (Euro 572K was awarded to the Northern HSC Trust). In Northern Ireland, progress has been made on the Medicines Optimisation and Control pilot theme — MOIC is the lead for this pilot theme and work on the pilot will be undertaken during 2021/22. In order to inform the development of the platform that will be used during SHAPES, MOIC has completed a number of interviews and reports for the 'Ecosystem' work package and has contributed to the relevant technical reviews. A range of dissemination and communication methods are being used and MOIC staff have delivered presentations and have contributed to the SHAPES newsletter.

Along with colleagues from the HSC and Ulster University, a wave one AIM development award from the NIHR was secured. This is preparatory funding which will allow the development of a full grant application. The full grant application, which will have a value of approximately £4million, will be submitted in October 2021. It will be submitted by a consortium from across Northern Ireland



and will aim to federate existing datasets so that appropriate exploration and data modelling can be undertaken to improve the health and well-being of those with multiple long term conditions.

A further two applications were made to Horizon 2020 earlier in the year. The EPHEDRA project was to consider the use of real world data to prevent drug related problems in those with complex chronic conditions. The PRAISE 4EU project was a **PR**edictive **A**pproach to frailty and resilience in pandemic response **E** contexts. Both applications were scored highly during the evaluation but were not funded. MOIC will continue to work with these collaborators with a view to reviewing the proposals for resubmission to future funding calls.

Linked to the WHO global medicines safety challenge, MOIC continues to work with the International Healthcare Institute (IHI). This includes contributing to the IHI Health Improvement Alliance Europe (HIAE) Eliminating Waste workgroup in relation to Medicines Optimisation. Finally the core group of the inter ecosystem Medicines Optimisation Working Group in the European Connected Health Alliance have identified a number of WHO global challenge champions. The group are producing a number of videos relevant to the challenge. The first video relating to polypharmacy has been completed and is available at <https://echalliance.com/mowg/>.

At a regional level, a representative from MOIC sits on the Safer Medicines Group. The group is working to ensure that Northern Ireland meets the WHO global medicines safety challenge and this includes supporting a range of research and service development projects. Along with colleagues in Medical Education from the Northern HSC Trust, MOIC will be hosting a NIMDTA Adept fellow during 2021/22. The Fellow will work on projects related to the WHO global medicines safety challenge and will contribute to the regional agenda on this issue.

MOIC assisted with the organisation of the first Celtic conference, which was held in Edinburgh in March 2019. The second conference was due to be held in Wales in March 2020 and was postponed until March 2021. The rearranged virtual event attracted over 300 delegates. The 3rd conference is scheduled to take place in Belfast in March 2022.

Following the successful conference in Poland co-hosted by MOIC in 2019, work is continuing with the newly established Polish Society of Clinical Pharmacy and the Polish Ministry of Health's National Consultant in Clinical Pharmacy. This collaboration aims to establish medicines optimisation pilots across a number of locations in Poland. This work has been shared with the Polish Consul General in Northern Ireland and a Memorandum of Understanding has been signed with the Polish Society of Clinical Pharmacy. It is intended that the pilots will be extended to include a number of other countries, including Estonia and Austria.

In 2020, MOIC hosted a digital event showcasing innovative examples from a range of EU partners reflecting how MOIC is cooperating and working cohesively throughout Europe to deliver safer and more effective medicines use. Over one hundred participants from 17 countries joined the event. The event coincided with the European Week of Regions and Cities and can be viewed at <https://player.vimeo.com/video/468578692>.

Under the hosting programme, visitors are usually welcomed to Northern Ireland for periods lasting between 1 day and 5 months. Obviously, during 2020/21 these visits were unable to

happen. Nevertheless some collaborative links that aimed to promote knowledge translation in the area of medicines optimisation were progressed including:

- MOIC staff have been working with representatives of the Tanzanian Institute of Pharmaceutical Care. The Institute has been awarded funding to aid the introduction of medicines optimisation initiatives and MOIC is assisting with the design and monitoring of these projects.
- Sonja Guntschnig from Austria visited Northern Ireland under the hosting programme in 2019. She is now working with MOIC and Northern HSC Trust colleagues to develop antimicrobial stewardship programmes within her hospital, which could potentially be scaled within her region. Linked to this, she will be undertaking a PhD under the supervision and mentorship of Ulster University and MOIC.
- MOIC and Pharmacy have been working with Ulster University to secure approval for a Pharmacy Masters student (Michael Tadros) from Misr University for Science and Technology (MUST) in Egypt. The project will evaluate the impact of the COVID-19 pandemic on antimicrobial prescribing and resistance patterns in secondary care and will commence in April 2021. Data collection will take place across the Antrim and Causeway sites within the Northern HSC Trust.
- Professor Scott is jointly supervising a new PhD student based at the University of Tartu in Estonia. During her studies, Anita Tuula will be examining the area of medicines use reviews with a focus on older people and polypharmacy in the community pharmacy setting.

Make a meaningful contribution to the Northern Ireland economy

During the year, MOIC signed an MOU with the Association of British Pharmaceutical Industries (ABPI) on behalf of Health and Social Care (HSC). The partnership aims to deliver 'triple win' benefits to patients, NI HSC and the economy. Steps have been taken to establish the appropriate governance board for this initiative and it is hoped that a number of projects will be conducted under the agreement. It is anticipated that the first project will contribute to the eradication of hepatitis C within Northern Ireland linked to the DoH plan in this regard.

Following the completion of the work of the European Innovation Partnership on Active and Healthy Ageing (EIP - AHA) in December 2020, a new interim grouping has been established. The Innovation for Active and Healthy Ageing (IN-4-AHA) will take forward and build on the work undertaken during the lifetime of the EIP - AHA. MOIC has joined this new group and will participate as required in their activities including applying for potential funding bids. Arising from this group, a connection has been made with Gisela Garcia Alvarez from the Galician Health Cluster and an event is being planned with the support of InvestNI.

PEACE PLUS is a new funding programme which will support peace and prosperity across Northern Ireland and the border counties of Ireland. MOIC has been working with colleagues in both regions, including those at policy level to help inform the development of this programme. It

is hoped that medicines safety and medicines optimisation will form a significant component of the final work plan. Two high level draft proposals were prepared for DH in relation to both themes 4 and 6 of this proposed programme. Theme 4 is Healthy and Inclusive communities and Theme 6 will focus on Building and Embedding Partnership and Collaborations.

Work continues with a consortium from England, Sweden, Norway, Iceland, USA, Australia and Ireland. An application was submitted to the Horizon 2020 Research and Innovation Framework Programme by this group in January 2020. The grant was entitled Safe Medications Safe Patients (SAFMED) Whilst the funding bid was unsuccessful it scored well and based on the feedback a further submission is planned to the new European funding schemes. In addition, it was felt that networking within the group was beneficial. As such, it will be maintained in order to further develop links and to apply for funding bids as opportunities arise. Regular webinars are being set up to showcase work from each partner with presentations from group members.

Specifically in relation to Norway and University of the Arctic in Tromso, MOIC has joined a bid that has been submitted to consider data sets with regard to medicines optimisation and the associated health economics that, if successful, will run until 2024.

MOIC continue to work with Invest NI and are an Invest NI Knowledge Partner. Two companies have been awarded Invest NI innovation vouchers to work with MOIC. One voucher, awarded to Nightingale Analytics, will be used to pilot a digital solution to assist in the diagnosis of dementia. This work will be undertaken in collaboration with the Dementia team at Health and Social Care (HSC). The second voucher has been given to Hi-Viso to assist with the development of an all-in-one face covering to provide protection for the eyes, nose and mouth.

Financial Report 2020/21

The Medicines Optimisation and Innovation Centre has reported an overall deficit of £43k and has £562k of deferred income from commercial funding carried forward into 2021/22. An income and expenditure report is included in Annex B.

DRAFT

Annex A: MOIC publications, presentations and reports 2020.21

Papers & publications

Jirjees FJ, Al-Oabdi HJ, Sartaj M, Conlon-Bingham G, Farren D, Scott MG, Gould I, Lopez-lozano JM, Aldeyab M. Antibiotic use and resistance in hospital: time series analysis strategy for determining and prioritising interventions. *Hospital Pharmacy Europe* 2020;95:13–19.

Hogg A, Huey R, Scott MG, Ferguson A. Informing critical care drug requirements in response to the COVID-19 pandemic. *Eur J Hosp Pharm* 2020;0:1–4.doi:10.1136/ejhpharm-2020-002368.

Odeh M, Scullin C, Hogg A, Fleming G, Scott MG, McElnay JC. A novel approach to medicines optimization post-discharge from hospital: pharmacist-led medicines optimization clinic. *Int J Clin Pharm* 2020. DOI 10.1007/s11096-020-01059-4.

Sablerolles RSG, Hogenhuis FEF, Lafeber M, et al. COvid MedicaTion (COMET) study: protocol for a cohort study *Eur J Hosp Pharm* 2020;27(4):191–193.

Editorial: MOIC Leads the Way. *Pharmacy in Focus* 2020;14:6–7.

Spargo M, Goodfellow N, Scullin C, Grigoleit S, Andreou A, Mavromoustaki CX, Guerra B. anso, M, Larburu N, Villacañas Ó, Fleming G, et al. Shaping the Future of Digitally Enabled Health and Care. *Pharmacy* 2021;9:17. <https://doi.org/10.3390/pharmacy9010017>

Syafhan N, Al Azzam S, Williams SD, Wilson W, Brady J, Lawrence P, McCrudden M, Ahmed M, Scott MG, Fleming GF, Hogg A, Scullin C, Horne R, Ahir H and McElnay JC. General practitioner practice-based pharmacist input to medicines optimisation in the UK: pragmatic, multicenter, randomised controlled trial. *J of Pharm Policy and Pract* 2021;14:4 <https://doi.org/10.1186/s40545-020-00279-3>.

Sablerolles RSG, Hogenhuis FEF, Lafeber M, et al. No association between use of ACE inhibitors or angiotensin II receptor blockers prior to hospital admission and clinical course of COVID-19 in the COvid MedicaTion (COMET) study. *Br J Clin Pharmacol* 2021;1–9; DOI: [10.1111/bcp.14751](https://doi.org/10.1111/bcp.14751).

Sablerolles RSG, Lafeber M, van Kempen JAL, et al. Association between Clinical Frailty Scale score and hospital mortality in adult patients with COVID-19 (COMET): an international, multicentre, retrospective, observational cohort study. *The Lancet Healthy Longevity* 2021;2(3): E163–E170. DOI: [https://doi.org/10.1016/S2666-7568\(21\)00006-4](https://doi.org/10.1016/S2666-7568(21)00006-4).

Ashiru-Oredope D, Kerr F, Hughes S, Urch J, Lanzman M, [Yau T](#), Cockburn A, patel R, [Sheikh A](#), [Gormley C](#), [Chavda A](#), [Vaghela T](#), [Phillips C](#), [Reid N](#), [Brady A](#). Assessing the Impact of COVID-19 on Antimicrobial Stewardship Activities/Programs in the United Kingdom. *Antibiotics* 2021; 10 (2)110 <https://doi.org/10.3390/antibiotics10020110>.

The ‘SHAPES’ we’re in. *Pharmacy in Focus* 2021;1:10–11.

Reports

Community Pharmacy Seasonal Flu Vaccination Pilot Service- Pharmacist Evaluation Report and Service User Information & Feedback Report. Presented to HSCB, August 2020.

Rapid review of pharmacy services changed in response to Covid-19 in Northern Ireland. Scott MG, Fleming GF, Martin S. Published by Department of Health NI. September 2020.

IMPACTAgewell® An Integrated Community Development Approach to Improving the Health & Well- Being of Older People: The Community Pharmacy fit. Presented to IMPACTAgewell October 2020.

Pharmacy Capacity Planning 2010-2020. A Rapid Review. Scullin C, Fleming G, Scott M, Medicines Optimisation Innovation Centre. Presented to the Department of Health. December 2020.

EVENTS organised or jointly organised by MOIC

Covid-19 and Pharmacy: The Northern Ireland Experience (24 September 2020): MOIC and Pharmacy Management organised a digital conference to showcase the changes made in NI by pharmacy in response to Covid 19

EU Regions Driving Medicines Safety (13 October 2020): MOIC hosted a digital conference to showcase innovative examples from a range of EU partners of how MOIC is co-operating and working cohesively throughout Europe to deliver safer and more effective medicines use. The event coincided with the European Week of Regions and Cities.

iSIMPATHY Launch Event (5 November 2020): MOIC collaborated with the other iSIMPATHY partners to host a formal launch of the iSIMPATHY project.

2nd Celtic Conference, Hosted by Wales. (11 March 2021): MOIC are part of the organising committee for the Celtic conference.

Video interviews

Maureen Spargo and Nicola Goodfellow, MedicalUpdateOnline.

- The SHAPES pilot project 22/02/2021 <https://medicalupdateonline.com/2021/02/the-shapes-pilot-project/>
- Putting the SHAPES pilot project into action 23/02/2021 <https://medicalupdateonline.com/2021/02/putting-the-shapes-pilot-project-into-action/>

Anita Hogg, MedicalUpdateOnline.

- MOIC and pandemic critical care drug requirements 16/11/20 <https://medicalupdateonline.com/2020/11/the-moic-and-pandemic-critical-care-drug-requirements/>
- Estimating pandemic critical care drug requirements 17/11/20 <https://medicalupdateonline.com/2020/11/estimating-pandemic-critical-care-drug-requirements/>
- Pandemic critical care drug requirements — lessons learned 18/11/20 <https://medicalupdateonline.com/2020/11/pandemic-critical-care-drug-requirements-lessons-learned/>

DRAFT

Conference presentations and posters

Authors/Presenter	Title	Poster or Oral	Conference/Meeting
Scott M & Gill D	Pharmacy and MOIC response to the covid pandemic	Oral presentation	Covid in Malaysia, Indonesia and NI conference. 19 May 2020
Scott M	SHAPES First Technical Review – work package report Task 6.4 Pilot Theme 3 – Medicine Control and Optimisation	Oral presentation	SHAPES technical review, 21 September 2020
Hogg A	Drug modelling for critical care	Oral Presentation	Covid-19 and Pharmacy: The Northern Ireland Experience 24 September 2020
Scott, M	Provision of PPE: Regional validation model	Oral Presentation	Covid-19 and Pharmacy: The Northern Ireland Experience 24 September 2020
Huey R	Ventilator and Oxygen Consumables	Oral Presentation	Covid-19 and Pharmacy: The Northern Ireland Experience 24 September 2020
Scott, M	Introduction and Oxygen Supply in Primary Care	Oral Presentation	Covid-19 and Pharmacy: The Northern Ireland Experience 24 September 2020
Hogg A	Collaboration and co-operation across regions – Northern Ireland	Oral Presentation	EU Regions Driving Medicines Safety, 13 October 2020
Scott M	Medicines Optimisation Innovation Centre and European co-operation	Oral Presentation	EU Regions Driving Medicines Safety, 13 October 2020

Annex B: Finance Report

Medicines Optimisation and Innovation Centre

Income and Expenditure position at 31st March 2021

	Deferred Income	Income from other Sources	DOH Funding	Total Income	Total Expenditure	Closing Balance
	£000's	£000's	£000's	£000's	£000's	£000's
Projects	579	28	714	1,321	-	1,215
Core			-	-	802	- 802
Total	579	28	714	1321	802	519

Carried Forward

562

Deficit

43

Medicines Optimisation and Innovation Centre Income & Expenditure as at 31st March 2021

	Project	Partners	As at 31st March 2021	Deferred Income
Deferred Income as at 1st April 2020				
Balance Sheet			£ 579,382	£ 579,382
2020/21				
HSCB			£ 638,338	
PHA Research & Development Programme Manager			£ 75,792	
External Funding				
Accord			£ 2,723	£ 2,723
ARC Project			University of Oxford & East Anglia £ 6,000	£ 6,000
			IKSUS £ 13,748	£ 13,748
			Attract, Retain, Recruit £ 5,500	£ 5,500
				£ -
				£ -
				£ -
				£ -
Total Income as at 31st March 2021			£ 1,321,483	£ 607,353

Expenditure as at 31st March 2021				
	MOIC Costs			
	Staffing Costs		£ 729,542	
	Non pay Costs		£ 27,488	
	Transfer of Funds to WHSCT		£ 40,307	£ 40,307
	Transfer of Funds to BHSCT		£ 5,000	£ 5,000
	Total Expenditure as at 31st March 2020		£ 802,336	£ 45,307
	Surplus / Deficit	Surplus	£ 519,147	£ 562,046

Deferred Income as at 31st March 2021 £ 562,046

Net Deficit as at 31st March 2021 **£ 42,899**